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DR AS/CA S042.4:2017

Requirements for connection to an air interface of a Telecommunications Network— Part 4: IMT Customer Equipment

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Australian STANDARD

Draft Australian Standard – *Requirements for connection to an air interface of a Telecommunications Network— Part 4: IMT Customer Equipment*

This Standard is issued in draft form for public comment as DR AS/CA S042.4:2017

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Guidance for public comment on DR AS/CA S042.4:2017

This draft Standard is the outcome of the revision of AS/CA S042.4:2015 undertaken by the Communications Alliance WC72 : ***New Cellular and IMT Customer Equipment Requirements*** Working Committee. The two month public comment phase is a part of the requirements of Communications Alliance Operating Procedures for the development or revision of an AS/CA Standard.

The reader is invited to comment on the requirements for customer equipment scoped within this Standard and on the following proposed recommendations. All submissions received will be made publicly available on the Communications Alliance website unless the submitter requests otherwise.

Please return comments by 2 March 2018 to:
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This draft is available from www.commsalliance.com.au for download.

Background

As the ETSI Standards for IMT which cover the essential requirements of the European Radio Equipment Directive (RED) are harmonised with the 3GPP Standards, the AS/CA Standards are being revised as necessary to maintain international alignment. The RED has replaced the Radio & Telecommunications Terminal Equipment Directive (R&TTE Directive) which was repealed on 13 June 2016. Further information on the EU Radio Equipment compliance arrangements can be found at http://www.etsi.org/technologies-clusters/technologies/regulation-legislation/red.

With respect to Band 28 (700 MHz) requirements for *RF compatibility, network integrity and interoperability with the STS*, at the time of the publication of the current edition of AS/CA S042.4, the ETSI EN 301 908-13 Standard which specifies these requirements had not been published. Now that ETSI EN 301 908-13 V11.1.1 (2016-07) is available, AS/CA S042.4 is being proposed to be updated to reflect the latest requirements.

New requirements for Carrier Aggregation and License Assisted Access (LAA) are also being proposed in this draft.

Compliance arrangements

On publication, this Standard becomes enforceable under the ACMA *Telecommunications (Labelling Notice for Customer Equipment and Customer Cabling) Instrument 2015*. Information on the ACMA TLN is available from the ACMA New Telecommunications Labelling Notice and technical standards website.

FOREWORD

General

This Standard was prepared by Communications Alliance and most recently revised by the WC72 : *New Cellular and IMT Customer Equipment Requirements* Working Committee. It is one of a series of Telecommunication Standards developed under the Memorandum of Understanding between the Australian Communications Authority (ACA) and the Australian Communications Industry Forum (ACIF).

Note: On 1 July 2005 the ACA became the Australian Communications and Media Authority (ACMA) and the Memorandum of Understanding continues in effect as if the reference to the ACA were a reference to ACMA.

Communications Alliance was formed in 2006 and continues the functions previously fulfilled by ACIF.

This Standard is the result of a consensus among representatives on the Communications Alliance Working Committee to produce it as an Australian Standard.

The requirements in this Standard are consistent with the aims of s376 of the *Telecommunications Act 1997*. Specifically these aims are—

(a) protecting the integrity of a telecommunications network or facility;

(b) protecting the health and safety of persons;

(c) ensuring access to emergency services; and

(d) ensuring interoperability with a standard telephone service (STS).

It should be noted that some Customer Equipment (CE) may also need to comply with requirements in other Standards or other Parts of this Standard.

The Standard should be read in conjunction with *AS/CA S042.1: General.*

Applicable electrical safety Standards, EMC and EMR Standards may apply under Commonwealth or State/Territory laws, or both.

Intellectual property rights

Equipment which is manufactured to comply with this Standard may require the use of technology which is protected by patent rights in Australia. Questions about the availability of such technology, under licence or otherwise, should be directed to the patent holder or Australian licensee (if known) or through enquiry at IP Australia which incorporates the Patent, Designs and Trade Marks and Offices. Further information can be found at www.ipaustralia.gov.au.

Standards revision

Australian Standards (AS/ACIF and AS/CA Standards) developed by Communications Alliance, are updated according to the needs of the industry, by amendments or revision. Users of these Standards should make sure that they possess the latest amendments or editions. Representations concerning the need for a change to this AS/CA Standard should be addressed to—

The Project Manager
Customer Equipment and Cable Reference Panel
Communications Alliance
PO Box 444
Milsons Point NSW 1565

Regulatory notice

This document will be submitted to the ACMA, for making as a technical standard under s376 of the *Telecommunications Act 1997*. Until it is made by the ACMA compliance with this Standard is voluntary.

The Standard as made by the ACMA will commence on the day after it registered under the *Legislative Instruments Act 2003* (LIA) and it will be a disallowable instrument within the meaning of s46A of the *Acts Interpretation Act 1901*.

For the purposes of the ACMA Standard, defined as *Telecommunications Technical Standard (Requirements for connection to an air interface of a Telecommunications Network – AS/CA S042) 2015*, the transition period is 12 months.

The ACMA also publishes Radiocommunications Advisory Guidelines and Determinations under the *Radiocommunications Act 1992* from time to time for managing interference in certain frequency bands

The ACMA is a Commonwealth authority with statutory powers to impose requirements concerning telecommunications Customer Equipment and Customer Cabling.

The ACMA requires Australian manufacturers and importers, or their Australian agents, of specified items of Customer Equipment and Customer Cabling to establish compliance with Standards such as this. Items are required to be labelled in accordance with the applicable labelling notices.

Details on current compliance arrangements can be obtained from the ACMA website at http://www.acma.gov.au or by contacting the ACMA below at:

Australian Communications and Media Authority
PO Box 13112
Law Courts PO
Melbourne VIC 8010
Australia

Telephone: +61 3 9963 6800
Facsimile: +61 3 9963 6899
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INTRODUCTION

This introduction for the DR AS/CA S042.4:2017 ***Requirements for connection to an air interface of a Telecommunications Network— Part 4: IMT Customer Equipment*** Standard is not an authoritative section of this Standard and is only provided as guidance for the user of the Standard to outline its objectives, and the factors that have been taken into account in its development.

The reader is directed to the clauses of this Standard for the specific requirements and to the ACMA for the applicable telecommunications labelling and compliance arrangements.

Note: Further information on the telecommunications labelling and compliance arrangements can be found in *the Telecommunications Labelling (Customer Equipment and Customer Cabling) Notice* (the TLN). The TLN can be obtained from the ACMA website at www.acma.gov.au.

The objective of Part 4 is to provide the basic compliance requirements and associated test methods for IMT CE in order to comply with the regulatory arrangements for such CE in Australia.

The objective of this revision is to align the Band 28 requirements for RF compatibility, network integrity and interoperability with the STS, with the latest version of the ETSI EN 301 908-13 Standard.

The principal differences between this edition of AS/CA S042.4 and the previous edition are—

(a) replacing the ETSI TS 136 101 Standard with ETSI EN 301 908-13 as the means to comply with Band 28 requirements;

(b) updating the references to the ETSI Standards and ITU-T Recommendations with the latest versions; and

(c) ensuring alignment with ETSI Standards as called up under the European Radio Equipment Directive (RED) which was published in the Official Journal of the European Commission on 22 May 2014.

(d) new requirements for Carrier Aggregation, NB IoT, Cat M1 and V2X technologies.

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1 INTERPRETATIVE GUIDELINES

1.1 Categories of requirements

This Standard contains mandatory requirements as well as provisions that are recommendatory only. Mandatory requirements are designated by the words '**shall**' or '**shall not**'. All other provisions are voluntary.

1.2 Compliance statements

Compliance statements, in italics, suggest methodologies for demonstrating CE's compliance with the requirements.

1.3 Definitions, expressions and terms

If there is any conflict between the definitions used in this Standard and the definitions used in the *Telecommunications Act 1997*, the definitions in the Act take precedence.

1.4 Notes

Text denoted as 'Note' is for guidance in interpretation and is shown in smaller size type.

1.5 References

(a) Applicable editions (or versions) of other documents referred to in this Standard are specified in Section 3: REFERENCES.

(b) If a document refers to another document, the other document is a sub-referenced document.

(c) Where the edition (or version) of the sub-referenced document is uniquely identified in the reference document, then that edition (or version) applies.

(d) Where the edition (or version) of the sub-referenced document is not uniquely identified in the reference document, then the applicable edition (or version) is that which is current at the date the reference document is legislated under the applicable regulatory framework, or for a non- legislated document, the date upon which the document is published by the relevant standards organisation.

(e) A number in square brackets '[ ]' refers to a document listed in Section 3: REFERENCES.

1.6 Units and symbols

In this Standard the International System (SI) of units and symbols is used in accordance with Australian Standard AS ISO 1000 [1].

1.7 Parts of Standards

CE scoped by this Standard is to comply with the applicable technology-specific Part(s) of this Standard.

2 SCOPE

2.1 This Standard applies to IMT CE. It defines the technical conditions and requirements for IMT CE that is designed or intended for use in connection with an IMT public mobile telecommunications service (PMTS) and is an addressable device.

2.2 This Standard applies to IMT CE based upon the following IMT technologies:

(a) UTRA FDD.

(b) E-UTRA FDD and E-UTRA TDD.

(c) OFDMA TDD WMAN.

2.3 CE is not excluded from the scope of this Standard by reason only that it is capable of performing functions additional to those described in this Standard.

3 REFERENCES

For dated references, only the edition cited applies. However, parties to agreements based on this Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below.

For undated references, the latest edition of the referenced document (including any amendments) applies. For ETSI Standards that are issued in Releases, the latest edition of the relevant Release applies.

	Publication	Title
	Australian Standards	
[1]	AS ISO 1000 -1998	The international System of Unit (SI) and its application.
	EC Publications	
[2]	Radio Equipment Directive (RED)	Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC
	ETSI publications	
[3]	ETSI TS 122 016	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; International Mobile station Equipment Identities (IMEI) (3GPP TS 22.016)
[4]	ETSI TS 122 185	LTE; Service Requirements for V2X services
[5]	ETSI TS 123 122	Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; Non-Access-Stratum (NAS) functions related to Mobile Station (MS) in idle mode (3GPP TS 23.122)
[6]	ETSI TS 124 008	Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; Mobile radio interface Layer 3 specification; Core network protocols; Stage 3 (3GPP TS 24.008)
[7]	ETSI TS 125 304	Universal Mobile Telecommunications System (UMTS); User Equipment (UE) procedures in idle mode and procedures for

	Publication	Title
		cell reselection in connected mode (3GPP TS 25.304)
[8]	ETSI TS 125 321	Universal Mobile Telecommunications System (UMTS); Medium Access Control (MAC) protocol specification (3GPP TS 25.321)
[9]	ETSI TS 125 331	Universal Mobile Telecommunications System (UMTS); Radio Resource Control (RRC); Protocol specification (3GPP TS 25.331)
[10]	ETSI TS 134 123-1	Universal Mobile Telecommunications System (UMTS); User Equipment (UE) conformance specification; Part 1: Protocol conformance specification (3GPP TS 34.123-1)
[11]	ETSI TS 134 123-2	Universal Mobile Telecommunications System (UMTS); User Equipment (UE) conformance specification; Part 2: Implementation conformance statement (ICS) proforma specification (3GPP TS 34.123-2)
[12]	ETSI TS 134 123-3	Universal Mobile Telecommunications System (UMTS); User Equipment (UE) conformance specification; Part 3: Abstract test suite (ATS) (3GPP TS 34.123-3)
[13]	ETSI TS 136 101	LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio transmission and reception (3GPP TS 36.101)
[14]	ETSI TS 136 300	LTE; Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall description; Stage 2
[15]	ETSI TS 136 321	LTE Evolved Universal Terrestrial Radio Access (E-UTRA) Medium Access Control (MAC) Protocol Specification (3GPP TS 36.321)
[16]	ETSI TS 136 322	LTE Evolved Universal Terrestrial Radio Access (E-UTRA) Radio Link Control (RLC) Protocol Specification (3GPP TS 36.322)
[17]	ETSI TS 136 323	LTE Evolved Universal Terrestrial Radio Access (E-UTRA) Packet Data Convergence Protocol (PDCP) Specification (3GPP TS 36.323)

	Publication	Title
[18]	ETSI TS 136 331	LTE Evolved Universal Terrestrial Radio Access (E-UTRA) Radio Resource Control (RCC) Protocol Specification (3GPP TS 36.331)
[19]	ETSI TS 136 521-1	LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) conformance specification; Radio transmission and reception; Part 1: Conformance testing (3GPP TS 36.521-1)
[20]	ETSI TS 136 523-1	LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); and Evolved Packet Core (EPC); User Equipment (UE) conformance specification; Part1 Protocol conformance specification (3GPP TS 36.523-1)
[21]	ETSI TS 136 523-2	LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); and Evolved Packet Core (EPC); User Equipment (UE) conformance specification; Part2: Implementation Conformance Statement (ICS) proforma specification (3GPP TS 36.523-2)
[22]	ETSI TS 136 523-3	LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); and Evolved Packet Core (EPC); User Equipment (UE) conformance specification; Part3: Test Suites (3GPP TS 36.523-3)
[23]	ETSI EN 301 908-1	IMT cellular networks; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU; Part 1: Introduction and common requirements
[24]	ETSI EN 301 908-2	IMT cellular networks; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU; Part 2: CDMA Direct Spread (UTRA FDD) User Equipment (UE)
[25]	ETSI EN 301 908-13	IMT cellular networks; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU; Part 13: Evolved Universal Terrestrial Radio Access (E-UTRA) User Equipment (UE)
[26]	ETSI EN 301 908-19	IMT cellular networks; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU; Part 19: OFDMA TDD WMAN (Mobile WiMAX™) TDD User Equipment (UE)

	Publication	Title
	FCC Requirements	
[27]	FCC Part 22 Rules	Public Mobile Services (URL: http://www.access.gpo.gov/nara/cfr/waisidx_05/47cfr22_05.html)
	ITU-T Recommendations	
[28]	X.509 (10/16)	Information technology - Open Systems Interconnection - The Directory: Public-key and attribute certificate frameworks

4 ABBREVIATIONS AND DEFINITIONS

For the purposes of this Standard, the following abbreviations, acronyms and definitions and those of Part 1 apply.

4.1 Abbreviations

Cat M1	Category M1
EC	European Commission
eMTC	enhanced Machine-Type Communication
EN	European Norm
FCC	Federal Communications Commission
ID	Identifier
IoT	Internet of Things
LAA	License Assisted Access
LPWA	Low-Power Wide-Area
NB	Notified Body
NB-IoT	NarrowBand Internet of Things
R&TTE	Radiocommunications & Telecommunications Terminal Equipment
RED	Radio Equipment Directive
TCB	Telecommunication Certified Body
UHF	Ultra High Frequency
V2X	Vehicle-to-Everything

4.2 Definitions

4.2.1 Carrier Aggregation

Carrier Aggregation is the aggregation of two or more LTE component carriers in the downlink, uplink or both, in order to support wider transmission bandwidths. FDD and TDD LTE component carriers in both licensed and unlicensed spectrum can be part of any Carrier Aggregation combination.

4.2.2 Cat M1

LTE Cat M1 is a LPWA technology which supports IoT through lower device complexity which provides extended coverage and long battery life. LTE Cat M1 uses a 1.4 MHz bandwidth and has a peak downlink and uplink data rate of 1 Mbps. Refer to ETSI 136 300 [14]

4.2.3 NB-IoT

NB-IoT is a cellular LPWA technology that significantly improves the power consumption of devices, system capacity and spectrum efficiency, especially in deep coverage.

NB-IoT uses a 200 kHz bandwidth and has a peak downlink and uplink data rate of 250 kbps. Refer to ETSI TS 136 300 [14]

4.2.4 V2X

Vehicle-to-everything describes a set of technologies that allow vehicles to communicate with each other and other smart transport solutions via existing cellular networks. Refer to ETSI 122 185 [4]

5 REQUIREMENTS

5.1 UTRA FDD

5.1.1 Applicability

The requirements in Clause 5.1 are applicable to CE based upon UTRA FDD technologies.

5.1.2 IMEI security

CE **shall** comply with IMEI security requirements of ETSI TS 122 016 [3].

Compliance with Clause 5.1.2 should be demonstrated by way of a manufacturer's DoC.

5.1.3 Core protocol specifications

CE **shall** comply with the applicable mandatory requirements of the following ETSI Core Specifications:

(a) ETSI TS 123 122 [5]

(b) ETSI TS 124 008 [6]

(c) ETSI TS 125 304 [7]

(d) ETSI TS 125 321 [8]

(e) ETSI TS 125 331 [9]

Note: The applicable mandatory requirements mean the relevant mandatory requirements in the ETSI specifications which have been implemented in the CE and commercially deployed by the manufacturer.

Compliance with Clause 5.1.3 should be demonstrated by way of a manufacturer's DoC for mandatory requirements.

Note 1: Formal conformance test cases covering mandatory requirements in ETSI Core Specifications for UTRA FDD are defined in ETSI TS 134 123 [10] [11] [12]. Test vendors integrate UTRA FDD reference test suite into their test platform and validate using reference UE before commercial release.

5.1.4 FCC UTRA Band 5

CE used in the band listed in Table 1 **shall** comply with the requirements of FCC Part 22 Rules [27] for RF compatibility, network integrity and interoperability with the STS.

TABLE 1

UTRA Band under FCC Rules

Band No.	Band frequency
FDD Band 5	850 MHz

Compliance with Clause 5.1.4 should be demonstrated by way of a—

(a) test report;

(b) FCC/TCB Grant of Equipment Authorization, based on FCC ID to FCC requirements; or

(c) manufacturer's DoC.

5.1.5 RED UTRA Bands

CE used in the bands listed in Table 2 **shall** comply with the requirements of ETSI EN 301 908-1 [13] for RF compatibility, network integrity and interoperability with the STS, including the requirements incorporated by reference and found in section 1 of ETSI EN 301 908-2 [24].

TABLE 2
UTRA Bands under ETSI

Band No.	Band frequency
FDD Band 1	2.1 GHz
FDD Band 8	900 MHz

Compliance with Clause 5.1.5 should be demonstrated by way of a—

(a) test report;

(b) EU-type examination by a Notified Body (NB), based on conformity assessment procedures described in the RED, Annex III [2]; or

(c) manufacturer's DoC, based on conformity assessment procedures described in the RED.

5.2 E-UTRA FDD and E-UTRA TDD

5.2.1 Applicability

The requirements in Clause 5.2 are applicable to CE based upon E-UTRA FDD and E-UTRA TDD technologies.

5.2.2 IMEI security

CE **shall** comply with IMEI security requirements of ETSI TS 122 016 [3].

Compliance with Clause 5.2.2 should be by way of a manufacturer's DoC.

5.2.3 Core Protocol Specifications

CE **shall** comply with the applicable mandatory requirement of the following ETSI Specifications:

(a) ETSI TS 136 321 [15]

(b) ETSI TS 136 322 [16]

(c) ETSI TS 136.323 [17]

(d) ETSI TS 136.331 [18]

Note: The applicable mandatory requirements mean the relevant mandatory requirements in the ETSI specifications which have been implemented in the CE and commercially deployed by the manufacturer.

Compliance with Clause 5.2.3 should be demonstrated by way of a manufacturer's DoC for the applicable mandatory requirements.

Note: Formal conformance test cases covering mandatory requirements are defined in ETSI TS 136 523-1 [20], ETSI TS 136 523-2 [21] and ETSI TS 136 523-3 [22].

5.2.4 Single carrier

5.2.4.1 RED E-UTRA bands

CE used in the bands listed in Table 3 **shall** comply with the requirements of ETSI EN 301 908-1 [23] and ETSI EN 301 908-13 [25] for RF compatibility, network integrity and interoperability with the STS.

TABLE 3
E-UTRA Bands under ETSI

Band No.	Band frequency
FDD Band 1	2.1 GHz
FDD Band 3	1.8 GHz
FDD Band 7	2.6 GHz
FDD Band 8	900 MHz
FDD Band 28	700 MHz
TDD Band 38	2.6 GHz
TDD Band 40	2.3 GHz
TDD Band 42	3.5 GHz

Compliance with Clause 5.2.4.1 should be demonstrated by way of a—

(a) test report;

(b) EU-Type Examination by a Notified Body (NB), based on conformity assessment procedures described in the RED, Annex III [2]; or

(c) manufacturer's DoC, based on conformity assessment procedures described in the RED, Annex III [2].

5.2.4.2 FCC E-UTRA Band 5

CE used in in the band listed in Table 4 **shall** comply with the requirements of FCC Part 22 Rules [27] for RF compatibility, network integrity and interoperability with the STS.

TABLE 4
E-UTRA Band under FCC Rules

Band No.	Band frequency
FDD Band 5	850 MHz

Compliance with Clause 5.2.4.2 should be demonstrated by way of a—

(a) test report;

(b) FCC/TCB Grant of Equipment Authorization, based on FCC ID to FCC requirements; or

(c) manufacturer's DoC.

5.2.5 Carrier Aggregation

5.2.5.1 RED Carrier Aggregation combinations

CE used in any combination of bands listed in Table 5 for Carrier Aggregation **shall** comply with the requirements of ETSI EN 301 908-1 [23] and ETSI EN 301 908-13 [25] for RF compatibility, network integrity and interoperability with the STS.

TABLE 5
Bands used for Carrier Aggregation

Band No.	Band frequency
FDD Band 1	2.1 GHz
FDD Band 3	1.8 GHz
FDD Band 5	850 MHz
FDD Band 7	2.6 GHz
FDD Band 8	900 MHz
FDD Band 28	700 MHz
TDD Band 38	2.6 GHz
TDD Band 40	2.3 GHz
TDD Band 42	3.5 GHz
TDD Band 46	5 GHz

Compliance with Clause 5.2.5.1 should be demonstrated by way of a—

(a) test report;

(b) EU-Type Examination by a Notified Body (NB), based on conformity assessment procedures described in the RED, Annex III [2]; or

(c) manufacturer's DoC, based on conformity assessment procedures described in the RED, Annex III [2].

Note 1: Conformance test cases covering mandatory transmitter and receiver requirements for Carrier Aggregation combinations are defined in ETSI TS 136 521-1 [19].

Note 2: Compliance options (a) and (b) may contain E-UTRA bands listed in Table 3 only. Subject to the CE Carrier Aggregation configurations, further evidence (DoC) may be required.

***Drafting Note:** The Working Committee has identified a potential future use of the TDD Band 46 (5 GHz) for License Assisted Access (LAA). The industry has worked to ensure that impact on other users in this band are minimised. Comments on inclusion of this band are invited from the reader.*

Further industry-related information to provide background on LAA can be found at:

https://en.wikipedia.org/wiki/LTE_frequency_bands

http://www.3gpp.org/news-events/3gpp-news/1660-laa_ieee

https://www.thinksmallcell.com/Technology/what-is-laa-and-how-does-it-affect-small-cells.html

5.2.5.2 Other Carrier Aggregation combinations

For Carrier Aggregation combinations that are not defined in ETSI EN 301 908-13 [25], CE used in any combination of bands listed in Table 5 for Carrier Aggregation **shall** comply with the mandatory transmitter and receiver requirements for Carrier Aggregation of Clauses 6 and 7 of ETSI 136 101 [13] for RF compatibility, network integrity and interoperability with the STS.

Compliance with Clause 5.2.5.2 should be demonstrated by way of a manufacturer's DoC against the mandatory transmitter and receiver requirements for Carrier Aggregation of ETSI TS 136 101 [13] which are designated by the words 'shall' or 'shall not'.

5.2.6 Cellular Internet of Things

5.2.6.1 Cat M1

CE used in the bands listed in Table 6 for Cat M1 **shall** comply with the mandatory transmitter and receiver requirements for Cat M1 of Clauses 6 and 7 of ETSI 136 101 [13] for RF compatibility, network integrity and interoperability with the STS.

Compliance with Clause 5.2.6.1 should be demonstrated by way of a—

(a) test report; or

(b) manufacturer's DoC against the mandatory transmitter and receiver requirements for Cat M1 of ETSI TS 136 101 [13] which are designated by the words 'shall' or 'shall not'.

Note 1: Formal conformance test cases covering mandatory transmitter and receiver requirements for Cat M1 are defined in ETSI TS 136 521-1 19]

TABLE 6
Cat M1 Bands

Band No.	Band frequency
FDD Band 1	2.1 GHz
FDD Band 3	1.8 GHz
FDD Band 5	850 MHz
FDD Band 7	2.6 GHz
FDD Band 8	900 MHz
FDD Band 28	700 MHz
TDD Band 40	2.3 GHz

5.2.6.2 NarrowBand IoT

CE used in the bands listed in Table 7 for NB IoT **shall** comply with the mandatory transmitter and receiver requirements for NB IoT of Clauses 6 and 7 of ETSI 136 101 [13] for RF compatibility and network integrity.

TABLE 7
NB-IOT Bands

Band No.	Band frequency
FDD Band 1	2.1 GHz
FDD Band 3	1.8 GHz
FDD Band 5	850 MHz
FDD Band 8	900 MHz
FDD Band 28	700 MHz

Compliance with Clause 5.2.6.2 should be demonstrated by way of a—

(a) test report; or

(b) manufacturer's DoC against the mandatory transmitter and receiver requirements for NB-IoT of ETSI TS 136 101 [13] which are designated by the words 'shall' or 'shall not'.

Note 1: Formal conformance test cases covering mandatory transmitter and receiver requirements for NB-IoT are defined in ETSI TS 136 521-1 [19]

5.2.7 V2X

CE used in the bands listed in Table 8 for V2X **shall** comply with the mandatory transmitter and receiver requirements for V2X of Clauses 6 and 7 of ETSI 136 101 [13] for RF compatibility and network integrity.

TABLE 8
V2X Bands

Band No.	Band frequency
FDD Band 3	1.8 GHz
FDD Band 7	2.6 GHz
FDD Band 8	900 MHz
TDD Band 47	5.9 GHz

Compliance with Clause 5.2.7 should be demonstrated by way of a—

(a) test report; or

(b) manufacturer's DoC against the mandatory transmitter and receiver requirements for V2X of ETSI TS 136 101 [13] which are designated by the words 'shall' or 'shall not'.

Note 1: Formal conformance test cases covering mandatory transmitter and receiver requirements for V2X are defined in ETSI TS 136 521-1 [19].

***Drafting Note:** The Working Committee has identified a potential future use of the TDD Band 47 (5.9 GHz) for V2X. The industry has worked to ensure that impact on other users in this band are minimised. Comments on inclusion of this band are invited from the reader.*

Further industry-related information to provide background on V2X can be found at:

https://en.wikipedia.org/wiki/Vehicle-to-everything

https://www.mobility.siemens.com/mobility/global/SiteCollectionDocuments/en/road-solutions/urban/trends/siemens-vehicle-to-x-communication-technology-infographic.pdf

https://www.qualcomm.com/invention/technologies/lte/advanced-pro/cellular-v2x

https://networks.nokia.com/vehicle-to-everything

5.3 OFDMA TDD WMAN

5.3.1 Applicability

The requirements in Clause 5.3 are applicable to CE based upon OFDMA TDD WMAN technologies.

5.3.2 PKC security

CE **shall** comply with PKC security requirements of ITU-T Recommendation X.509 [28].

Compliance with Clause 5.3.2 should be by way of a manufacturer's DoC.

5.3.3 TDD Band Class 3 (2.5 GHz)

CE used in the band listed in Table 9 **shall** comply with the requirements of ETSI EN 301 908-19 [26] for RF compatibility, network integrity and interoperability with the STS.

TABLE 9
OFDMA TDD WMAN Band Class 3

Band No.	Band frequency
TDD Band Class 3	2.5 GHz

Compliance with Clause 5.3.3 should be demonstrated by way of a test report.

5.3.4 TDD Band Class 5 (3.5 GHz)

CE used the band listed in Table 10 **shall** comply with the requirements of ETSI EN 301 908-19 [26] for RF compatibility, network integrity and interoperability with the STS.

TABLE 10
OFDMA TDD WMAN Band Class 5

Band No.	Band frequency
TDD Band Class 5	3.5 GHz

Compliance with Clause 5.3.4 should be demonstrated by way of a test report.

6 TESTING

6.1 Verification of compliance with requirements

Compliance with all mandatory requirements in this AS/CA Standard is to be verified. This may be done by direct measurement, modelling and analysis, operation or inspection.

Methods for demonstrating compliance of CE with the requirements clauses specified in this AS/CA Standard are described in the requirements clauses and in the referenced Standards.

Verification of compliance with the referenced standards may be confirmed by test reports to later versions of the referenced standards provided that all clauses of the referenced standards are shown to be met.

Alternative methods of demonstrating compliance to those described may be used if the risk of passing non-compliant CE is not increased because of increased measurement uncertainty.

PARTICIPANTS

The Working Committee responsible for the revisions made to this Standard consisted of the following organisations:

Organisation	Membership
ACMA	Non-Voting
Apple	Voting
Comtest Laboratories	Voting
Hewlett Packard	Voting
Huawei	Voting
Market Access	Voting
Motorola Mobility	Voting
Samsung	Voting
Singtel Optus	Voting
Stanimore	Non-Voting
Telstra	Voting
Vodafone Hutchison Australia	Voting

This Working Committee was chaired by Steve Vodicka of Telstra. Mike Johns of Communications Alliance provided project management support.

NOTES

Communications Alliance was formed in 2006 to provide a unified voice for the Australian communications industry and to lead it into the next generation of converging networks, technologies and services.

In pursuing its goals, Communications Alliance offers a forum for the industry to make coherent and constructive contributions to policy development and debate.

Communications Alliance seeks to facilitate open, effective and ethical competition between service providers while ensuring efficient, safe operation of networks, the provision of innovative services and the enhancement of consumer outcomes.

It is committed to the achievement of the policy objective of the *Telecommunications Act 1997* - the greatest practicable use of industry self-regulation without imposing undue financial and administrative burdens on industry.

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